

DIGITRON SEMICONDUCTORS

5KP5.0-5KP110A

5000W TRANSIENT VOLTAGE SUPPRESSOR

FEATURES

- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)
- Available in both unidirectional and bidirectional construction (bidirectional "C" or "CA" suffix)
- Available in both axial leaded and radial packages ("R" prefix for radial packages)
- Axial and radial available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number
- Selections for 5.0 to 110 volts standoff voltage
- Suppresses transients up to 5000 watts @ 10/10000µs and 34000 watts @ 8/20µs
- Fast response

MAXIMUM RATINGS

Peak Pulse Power Dissipation @ 25°C	5000 watts at 10/1000µs
Impulse Repetition Rate (Duty factor)	0.05%
t_{clamping} (0 volts to V_(BR) min):	< 100ps theoretical for unidirectional and < 5 ns for bidirectional
Operating and Storage Temperature:	-65 to +150°C
Thermal Resistance:	20°C/W junction to lead or 80°C/W junction to ambient when mounted on FR4 PC board with 4mm ² copper pads and track width 1 mm, length 25 mm
Steady-State Power dissipation:	6 watts at T _L = 30°C or 1.56 watts at T _A = 25°C when mounted on FR4 PC board described for thermal resistance
Forward Surge Voltage:	3.5 V maximum @ 100 Amps 8.3 ms half-sine wave
Solder Temperatures:	260°C for 10 s (maximum)

ELECTRICAL CHARACTERISTICS

Part Number ⁽²⁾	Reverse Stand-Off Voltage V _{WM} ⁽¹⁾ Volts	Breakdown Voltage V _(BR)			Maximum Clamping Voltage V _C @ I _{PP} Volts	Maximum Standby Current I _D @ V _{WM} µA	Maximum Peak Pulse Current I _{PP} Fig. 2 A	Maximum Temperature Coefficient of V _(BR) αV _(BR) mV/°C
		V _(BR) @		I _(BR)				
		Volts	Volts	mA				
5KP5.0	5.0	6.40	7.30	50	9.6	2000 ⁽³⁾	520	4.0
5KP5.0A	5.0	6.40	7.00	50	9.2	2000 ⁽³⁾	543	4.0
5KP6.0	6.0	6.67	8.15	50	11.4	5000	439	4.0
5KP6.0A	6.0	6.67	7.37	50	10.3	5000	485	4.0
5KP6.5	6.5	7.22	8.82	50	12.3	2000	407	4.0
5KP6.5A	6.5	7.22	7.98	50	11.2	2000	447	4.0
5KP7.0	7.0	7.78	9.51	50	13.3	1000	378	5.0
5KP7.0A	7.0	7.78	8.60	50	12.0	1000	417	5.0
5KP7.5	7.5	8.33	10.2	5	14.3	250	350	6.0
5KP7.5A	7.5	8.33	9.21	5	12.9	250	388	6.0
5KP8.0	8.0	8.89	10.9	5	15.0	150	333	6.0
5KP8.0A	8.0	8.89	9.83	5	13.6	150	367	6.0
5KP8.5	8.5	9.44	11.5	5	15.9	50	314	7.0
5KP8.5A	8.5	9.44	10.4	5	14.4	50	347	7.0
5KP9.0	9.0	10.0	12.2	5	16.9	20	295	8.0
5KP9.0A	9.0	10.0	11.1	5	15.4	20	325	8.0
5KP10	10	11.1	13.6	5	18.8	15	266	9.0
5KP10A	10	11.1	12.3	5	17.0	15	294	9.0
5KP11	11	12.2	14.9	5	20.1	10	249	10
5KP11A	11	12.2	13.5	5	18.2	10	274	10

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		$V_{(BR)}$ @		$I_{(BR)}$				
	Volts	Volts	mA	Volts	μA	A	mV/°C	
5KP12	12	13.3	16.3	5	22.0	10	227	11
5KP12A	12	13.3	14.7	5	19.9	10	251	11
5KP13	13	14.4	17.6	5	23.8	10	210	12
5KP13A	13	14.4	15.9	5	21.5	10	232	12
5KP14	14	15.6	19.1	5	25.8	10	194	13
5KP14A	14	15.6	17.2	5	23.2	10	215	13
5KP15	15	16.7	20.4	5	26.9	10	188	15
5KP15A	15	16.7	18.5	5	24.4	10	206	15
5KP16	16	17.8	21.8	5	28.8	10	176	18
5KP16A	16	17.8	19.7	5	26.0	10	192	16
5KP17	17	18.9	23.1	5	30.5	10	164	19
5KP17A	17	18.9	20.9	5	27.6	10	181	18
5KP18	18	20.0	24.4	5	32.2	10	155	20
5KP18A	18	20.0	22.1	5	29.2	10	172	19
5KP20	20	22.2	27.1	5	35.8	10	139	24
5KP20A	20	22.2	24.5	5	32.4	10	154	22
5KP22	22	24.4	29.8	5	39.4	10	127	27
5KP22A	22	24.4	26.9	5	35.5	10	141	24
5KP24	24	26.7	32.6	5	43.0	10	116	30
5KP24A	24	26.7	29.5	5	38.9	10	128	27
5KP26	26	28.9	35.3	5	46.6	10	107	33
5KP26A	26	28.9	31.9	5	42.1	10	119	29
5KP28	28	31.1	38.0	5	50.1	10	99	34
5KP28A	28	31.1	34.4	5	45.5	10	110	30
5KP30	30	33.3	40.7	5	53.5	10	93	38
5KP30A	30	33.3	36.8	5	48.4	10	103	35
5KP33	33	36.7	44.9	5	59.0	10	85	41
5KP33A	33	36.7	40.6	5	53.3	10	94	38
5KP36	36	40.0	48.9	5	64.3	10	78	45
5KP36A	36	40.0	44.2	5	58.1	10	86	40
5KP40	40	44.4	54.3	5	71.4	10	70	50
5KP40A	40	44.4	49.1	5	64.5	10	78	45
5KP43	43	47.8	58.4	5	76.7	10	65	54
5KP43A	43	47.8	52.8	5	69.4	10	72	49
5KP45	45	50.0	61.1	5	80.3	10	62	57
5KP45A	45	50.0	55.3	5	72.7	10	69	51
5KP48	48	53.3	65.1	5	85.5	10	58	62
5KP48A	48	53.3	58.9	5	77.4	10	65	55
5KP51	51	56.7	69.3	5	91.1	10	55	65

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Part Number ⁽²⁾	Reverse Stand-Off Voltage V_{WM} (Note 1)	Breakdown Voltage $V_{(BR)}$			Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Standby Current $I_D @ V_{WM}$	Maximum Peak Pulse Current I_{PP} Fig. 2	Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$
		$V_{(BR)}$ @		$I_{(BR)}$				
	Volts	Volts		mA	Volts	μA	A	mV/°C
5KP51A	51	56.7	62.7	5	82.4	10	61	60
5KP54	54	60.0	73.3	5	96.3	10	52	70
5KP54A	54	60.0	66.3	5	87.1	10	57	64
5KP58	58	64.4	78.7	5	103.0	10	49	77
5KP58A	58	64.4	71.2	5	93.6	10	53	69
5KP60	60	66.7	81.5	5	107.0	10	47	79
5KP60A	60	66.7	73.7	5	96.8	10	52	70
5KP64	64	71.1	86.9	5	114.0	10	44	85
5KP64A	64	71.1	78.6	5	103.0	10	49	75
5KP70	70	77.8	95.1	5	125	10	40	93
5KP70A	70	77.8	86.0	5	113	10	44	84
5KP75	75	83.3	102.0	5	134	10	37	100
5KP75A	75	83.3	92.1	5	121	10	41	90
5KP78	78	86.7	106.0	5	139	10	36	104
5KP78A	78	86.7	95.8	5	126	10	40	94
5KP85	85	94.4	115.0	5	151	10	33	113
5KP85A	85	94.4	104.0	5	137	10	36	102
5KP90	90	100	122	5	160	10	31	120
5KP90A	90	100	111	5	146	10	34	109
5KP100	100	111	136	5	179	10	28	134
5KP100A	100	111	123	5	162	10	31	122
5KP110	110	122	149	5	196	10	26	147
5KP110A	110	122	135	5	177	10	28	132

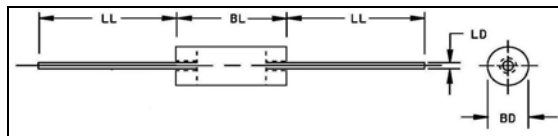
Note 1: Transient voltage suppressors are normally selected with reverse "Stand-Off Voltage" V_{WM} which should be equal or greater than the dc or continuous peak operating voltage level.

Note 2: For bidirectional construction, indicate C or CA suffix after the part number.

Note 3: For the 5KP5.0C and 5KP5.0CA double the Maximum Standby Current to 4000 μA

MECHANICAL CHARACTERISTICS

Case:	Void-free transfer molded thermosetting epoxy body meeting UL94V-0
Marking:	Body painted, alpha-numeric
Polarity:	Cathode band. Bidirectional not marked for polarity

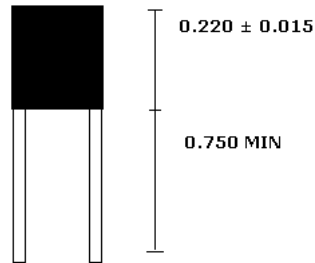


	Dimensions			
	Digi I			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	0.340	0.360	8.600	9.100
BL	0.340	0.360	8.600	9.100
LD	0.047	0.053	1.194	1.346
LL	1.000	-	25.400	-

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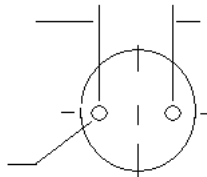
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CASE 5R



0.250 ± 0.015
CENTERS

0.050 ± 0.003
LEAD DIAMETER



0.350 ± 0.010
DIAMETER

DIMENSIONS ARE IN INCHES

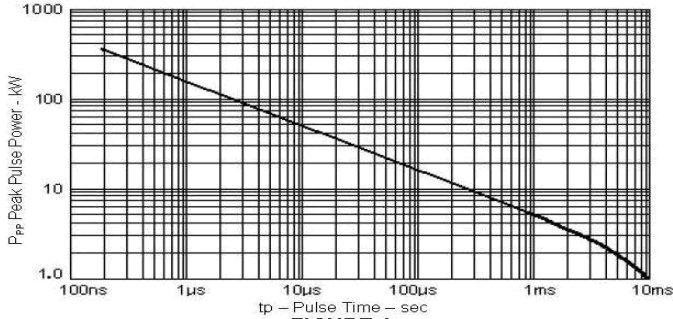


FIGURE 1
Peak Pulse Power vs. Pulse Time to 50% of Exponentially Decaying Pulse

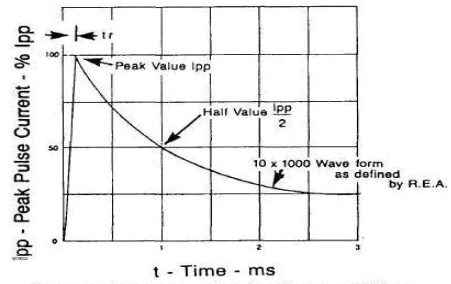


FIGURE 2
Pulse Waveform
Test waveform parameters: tr=10 μs, tp=1000 μs

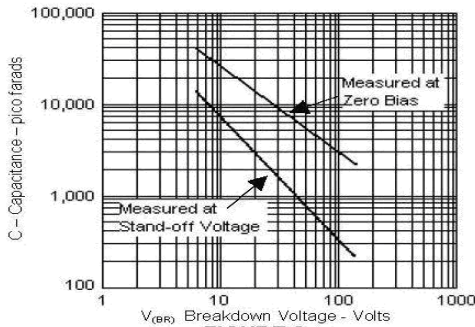


FIGURE 3
Typical Capacitance vs Breakdown Voltage